## Supporting Information

## Non-organic solvent extraction of capsaicinoids from oil combining with fluorescent lateral flow immunoassay strip

## for on-site identification of illegally recycled waste cooking oil

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**Fig.S1** Optimization of the detection time. (a) the effect of detection time on the FI values of the T line, (b) the effect of detection time on the T/C ratio.



**Fig.S2** The I% when detecting CAP extracted by different cyclodextrin derivative solutions from oil samples.



**Fig.S3** Standard curves for CAP in different cyclodextrin derivative solutions (a) PBST. (b) M- $\beta$ -CD. (c) DM- $\beta$ -CD. (d) S- $\beta$ -CD. (e) HP- $\beta$ -CD. (f) E- $\beta$ -CD.



Fig.S4 The I% when detecting CAP extracted by different concentrations of DM- $\beta$ -CD solution from oil samples.



**Fig.S5** Standard curves for CAP in different concentrations of DM- $\beta$ -CD solution. (a) 0.01M. (b) 0.02M. (c) 0.03M. (d) 0.04M.



Fig.S6 The I% when detecting of CAP extracted from oil by DM- $\beta$ -CD solution with different pH.



**Fig.S7** Standard curves for CAP in DM-β-CD solution.



Fig.S8 The I% when detecting of CAP extracted from oil by DM- $\beta$ -CD solution at different W/O ratios.



**Fig.S9** (a)The extraction efficiency for CAP at different W/O ratios. (b) The extraction efficiency for CAP at different vortex times.



**Fig.S10** The T/C value when detecting CAP in CRM with test cards stored at different times.